

Interferometric Star Tracker, Phase II

Completed Technology Project (2015 - 2018)



Project Introduction

A compact, lightweight, high accuracy star tracker is a key enabler for future NASA space missions, from precise pointing of the large space telescopes to autonomous navigation and formation flying. For high precision attitude determination system, one of the identified needs is to provide milli-arcsecond class pointing for large space telescopes. Optical Physics Company (OPC) has developed a novel interferometric star tracker than can provide milli-arcsecond class accuracy for future NASA space missions. The interferometric is similar to a standard star tracker, but with the addition of the interferometer subassembly in front of the imaging lens. This subassembly converts incoming starlight into a set of quadrature signals with sinusoidal dependence on the starlight incident angle. These quadrature signals are used to determine star position, rather than the centroiding used in standard start trackers which enables the high accuracy. OPC has designed and is presently manufacturing a compact (0.35U), lightweight (0.35 kg) and low power (<4W) interferometric star tracker for the Air Force.

Primary U.S. Work Locations and Key Partners

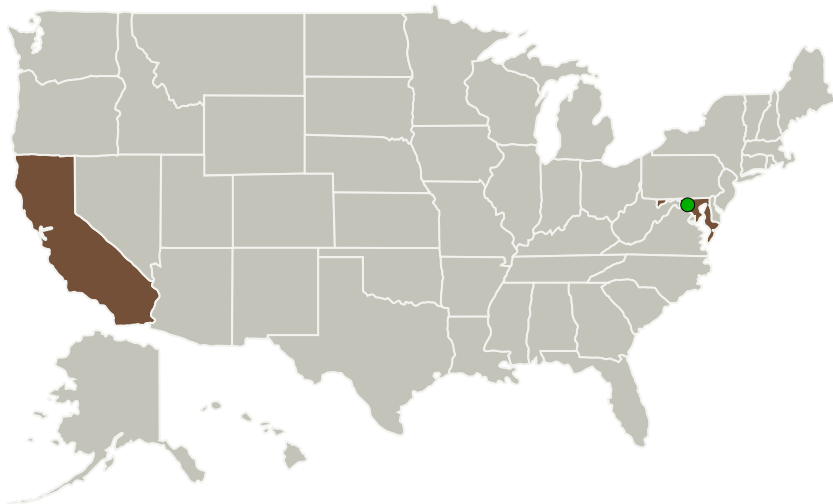
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Phase II

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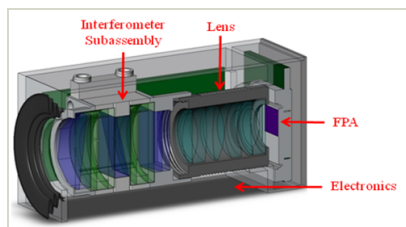


Organizations Performing Work	Role	Type	Location
Optical Physics Company	Lead Organization	Industry	Calabasas, California
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations

California	Maryland
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Images



Briefing Chart

Interferometric Star Tracker -
Phase II Briefing Chart
(<https://techport.nasa.gov/image/135047>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Optical Physics Company

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

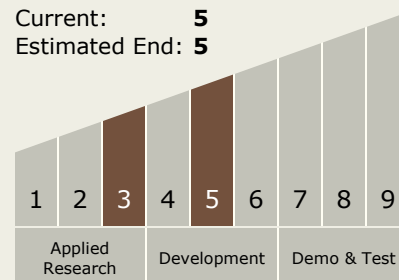
Carlos Torrez

Principal Investigator:

Richard A Hutchin

Technology Maturity (TRL)

Start: 3
Current: 5
Estimated End: 5



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Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
 - └ TX17.4 Attitude Estimation Technologies
 - └ TX17.4.3 Attitude Estimation Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System